



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,590	12/31/2003	Bradley Nelson	AUS920030119US1	8597
42640	7590	01/10/2008	EXAMINER	
DILLON & YUDELL LLP 8911 NORTH CAPITAL OF TEXAS HWY SUITE 2110 AUSTIN, TX 78759			SILVER, DAVID	
		ART UNIT	PAPER NUMBER	
		2128		
		MAIL DATE		DELIVERY MODE
		01/10/2008		PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/750,590	NELSON ET AL.
	Examiner	Art Unit
	David Silver	2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 17 October 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 12,27,42,52-59,66-73 and 80-87 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 12,27,42,52-59,66-73 and 80-87 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

1. The Instant Office Action is in response to an Election made on 10/17/2007 made in response to a Restriction made on 10/05/2007, which was made in response to a Request for Continued Examination filed 7/17/2007.
2. Claims 12, 27, 42, 52-59, 66-73, and 80-87 are currently pending in Instant Application.

Priority

3. Priority is not claimed (**Effective Filing: 12/31/2003**).

Response to Arguments

Response: 35 U.S.C. § 101

4. **Examiner Response:**

Applicants' amendments are sufficient to overcome the 35 U.S.C. § 101 rejections.

Specifically, in claim 42, the "computer useable medium" is interpreted as a medium that is storing the program code instructions. As such, the claim is deemed statutory in view of MPEP 2106.01:

"a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory."

Furthermore, the claim will be treated as a product claim in view of MPEP 2106.01, which recites:

"When a computer program is recited in conjunction with a physical structure, such as a computer memory, USPTO personnel should treat the claim as a product claim."

Accordingly, the 35 U.S.C. § 101 rejections have been **withdrawn**.

Arguments regarding claim 36 are moot as the claim has been cancelled.

Response: 35 U.S.C. § 112 P2

5. **Examiner Response:**

Arguments regarding claims 6, 21, and 36 are moot as the claims have been cancelled.

Applicants' amendments of claims 12 and 42 are sufficient to overcome the 35 U.S.C. § 112 rejection set-forth in the Previous Office Action. Accordingly, the 35 U.S.C. § 112 P2 rejections have been **withdrawn**. However, the amendments present new 35 U.S.C. § 112 P2 deficiencies which are detailed

below in the respective section.

Response: 35 U.S.C. § 103

6. Applicants argue:

6.1 "Applicant also respectfully submits that exemplary Claim 12 is not rendered unpatentable by the combination of cited references because that combination does not disclose, teach or suggest each claimed feature. For example, the combination of Raimi and Levin does not disclose, teach or suggest the following features of exemplary Claim 12 as amended:

... wherein the trace array is further logically coupled to receive a control signal among the plurality of signals;

... wherein recording trace data includes recording, within the trace array, values assumed by the monitored signal set during only those cycles of functional operation during which the control signal is asserted and refraining from recording values assumed by the monitored signal set during those cycles of functional operation during which the control signal is not asserted.

In the last Office Action dated March 20, 2007, the Examiner asserted that the use of the claimed control signal is inherently disclosed by "the power input [because] when power is asserted (provided) the values are stored." Applicant respectfully traverses the assertion of inherency because a "power input" is not logically coupled to a trace array as claimed. In addition, a design entity that is powered off does not have "cycles of functional operation during which the control signal is not asserted," as explicitly set forth in exemplary Claim 12. Because the combination of Raimi and Levin does not disclose, teach or suggest each claimed feature, recited in Claim 12 Applicant respectfully submits that the rejection of exemplary Claim 12 as unpatentable under 35 U.S.C. § 103 is overcome.

The foregoing remarks made with respect to exemplary Claim 12 also overcome the rejections of similar independent Claims 27 and 42.

7. Examiner Response:

Applicants' arguments have been fully considered but are unpersuasive. Specifically, attention is drawn to (col: 18 line: 3-16), which recites:

"In Nth event controls 109, the counter (CTR) is incremented by each occurrence of the event(s)/conditions(s) selected for measurement. Each time the incremented counter reaches value N, a sampling signal is outputted on path 110 to gates 31 to enable the recording in the ITA of the selected set of signals in the latched set provided on bus 111 from collector 104, and then the counter is reset to zero."

Art Unit: 2128

The "sampling signal" works as an enabling signal and when it is outputted (asserted/high/1) the ITA (instruction trace array) records data on the set of signals. Otherwise, as implied by the above passage, when the enable signal (sampling signal) is not outputted (not asserted/low/0), no collection is performed. In this instance, as necessitated by amendment, the control signal is correlated to the sampling signal which functions as the enable signal for the trace array.

Applicants' arguments have been fully considered but are unpersuasive. Thus, the 35 U.S.C. § 103 rejections have been **maintained**.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 12, 27, 42, 52-59, 66-73, and 80-87 are rejected under 35 U.S.C. 112, second paragraph, as being **indefinite** for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claims 12, 27 and 42, the claims are rendered indefinite by the term "refraining from recording values". Specifically, the word refraining is ambiguous as it does not clearly define whether there is merely resistance from recording (recording can still take place), or no recordings take place. Definition: "S: (v) refrain, forbear (resist doing something)" (Source:

<http://wordnet.princeton.edu/perl/webwn?s=refrain>). Clarification is required.

9. Claims not specifically mentioned are rejected by virtue of their dependency.
10. The Applicants are required to fix all other similar occurrences of the above-cited deficiencies.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2128

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 12, 27, 42, 52-55, 57-58, 66-73, and 80-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raimi (**USP 5,604,895**), and in view of Levin (**USP 4,821,178**).

The combination of Raimi and Levin discloses: 12. A method of reporting simulation data obtained by the simulation of an electronic design within a data processing system, said method comprising:

a simulator running a testcase against a simulation model of the electronic design, wherein: the simulation model is formed of representations of instances of a plurality of design entities, the instances of the design entities contain a plurality of signals and functional logic that define functional operation of the electronic design (**Raimi: col: 4 line: 24-30; col: 5 line: 45-67**),
each instance of at least a particular design entity of the plurality of design entities contains an instance of an instrumentation entity that monitors the containing instance of the particular design entity but does not contribute to functional operation of the electronic design
(Raimi: col: 3 line: 55-67 to col: 4 line: 24).

Raime however does not expressly disclose: each instance of the instrumentation entity contains a trace array logically coupled to receive a monitored signal set including at least one signal among the plurality of signals, wherein the trace array is further logically coupled to receive a control signal among the plurality of signals; recording trace data for the monitored signal set within the trace array during the running of the testcase, wherein the recording includes concurrently storing within the trace array multiple values of the monitored signal set obtained over multiple cycles of functional operation of the simulation model, wherein recording trace data includes recording, within the trace array, values assumed by the monitored signal set during only those cycles of functional operation during which the control signal is asserted and refraining from recording values assumed by the monitored signal set during those cycles of

Art Unit: 2128

functional operation during which the control signal is not asserted; and exporting said trace data from said trace array in a trace file and storing said trace file in data storage. Levin which discloses an analogous system discloses the said features (**Levin: col: 3 line: 55-67; col: 3 line: 16-24**). It would have been obvious to one of ordinary skill in the art <computer engineering / vlsi / circuit design / debugging> at the time of Applicant's invention to combine the references in order to facilitate faster storage of trace information. Such trace arrays enable the circuit to store information for later retrieval and analysis. In fact, it appears Raimi indeed uses trace arrays for the purpose of tracking information for later use (**Raimi: col 11 line 20-28**). Further, in view of The Supreme Court Ruling in KSR v. Teleflex, one of ordinary skill in the art would have recognized that applying the known technique and improvement disclosed by Levin to the "base" device of Raimi and the results would have been entirely predictable.

As per claims 27 and 42, note the rejection of claims 12 above. The Instant Claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings.

Raimi discloses: 52. The method of Claim 12, wherein exporting the trace data in a trace file includes exporting the trace data in a trace file indicating an association between a value of said monitored signal set and an enumerated value containing a textual string (**col: 10 line: 48-51; see also Advisory Action dated 5/24/2007 section 11 for the detailed explanation of the applicability**).

Raimi discloses: 53. The method of Claim 12, wherein recording trace data comprises recording in the trace array a number of functional cycles elapsed between said values assumed by the monitored signal set (**col: 26 line: 58 to col: 27 line: 4**).

Levin discloses: 54. The method of Claim 53, wherein: the trace array has a counter that counts the functional cycles; and said recording trace data includes recording in the trace array an entry indicating overflow of said counter (**col: 6 line: 13-22**).

Levin discloses: 55. The method of Claim 12, and further comprising: during function operation, the instrumentation entity signaling that the trace array is full; in response to said signaling, automatically

Art Unit: 2128

halting running of the testcase prior to completion of the testcase and performing said exporting; and thereafter, resuming running of the testcase (**col: 11 line: 10-16**).

As per claims 27, 66-69, 42, 80-83, note the rejection of claims 12, 52-55 above. The Instant Claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings.

12. Claims 59, 73, 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Raimi (USP 5,604,895)**, and in view of **Levin (USP 4,821,178)**, and further in view of **Advani (USP 6,057,839)**.

As per claim 59, Raimi and Levine disclose fully claim 12. The combination however does not expressly disclose the method of Claim 12, and further comprising accessing the trace file in data storage with a trace analysis tool. Advani however discloses an analogous system having the feature (**col: 4 line: 30-34**). It would have been obvious to one of ordinary skill in the art <computer engineering / VLSI / circuit design, simulation, and debugging> at the time of Applicant's invention to combine the references in order to help visualize the trace data with a tool, rather than reviewing it manually.

As per claims 73, 87, note the rejection of claims 59 above. The Instant Claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings.

13. Claim 56, 58, 70, 72, 84 and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Raimi (USP 5,604,895)**, and in view of **Levin (USP 4,821,178)**, and further in view of Official Notice taken.

As per claims 56, 70 and 84, Raimi and Levine fully disclose claim 12. The combination however does not expressly disclose the method of Claim 12, wherein said exporting includes: exporting a trace file including a plurality of fields, said plurality of fields including at least one of a set comprising a file version field and an array type field indicating one of plurality of trace array types. Official Notice is taken with respect to this limitation. File headers are routinely used and common place in file to identify the file and how it is to be opened. The file headers identify which program and the version of the program that was used in order to properly read the contents of the file. For example, MS Office version 2003 have a

Art Unit: 2128

different header having a file version, than ones from, for example, MS Office 2000. It would have been obvious to do this because as technology advances there is a need to keep a certain amount of backward compatibility with legacy / old programs such that work does not need to be re-done with every version upgrade.

As per claim 58, Raimi and Levine fully disclose claim 12. The combination however does not expressly disclose the method of Claim 12, wherein said storing comprises automatically naming the trace file in data storage by a filename indicating the containing instance of the particular design entity. Official Notice is taken with respect to this feature. Naming files by the context is well known in the art < computer engineering / VLSI / circuit design, simulation, and debugging / version tracking>. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the features in order to help identify the entities' respective trace file quicker; thus, saving costs associated with the time required to find an obscurely named trace data file. This is also routinely when, for example, saving files in general. For example, MS Office, MS Internet Explorer, etc, all default to save the title of the document as the filename to help the user identify the contents. Furthermore, doing so automatically is not sufficient to distinguish over the prior-art. See MPEP 2144.04 recited below:

III. AUTOMATING A MANUAL ACTIVITY

In re Venner, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958) (Appellant argued that claims to a permanent mold casting apparatus for molding trunk pistons were allowable over the prior art because the claimed invention combined "old permanent- mold structures together with a timer and solenoid which automatically actuates the known pressure valve system to release the inner core after a predetermined time has elapsed." The court held that broadly **providing an automatic or mechanical means** to replace a manual activity which accomplished the same result **is not sufficient to distinguish over the prior art.**). (emphasis added)

As per claims 72, 86, note the rejection of claims 58 above. The Instant Claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings.

14. Claim 57, 71, and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Raimi (USP 5,604,895)**, and in view of **Levin (USP 4,821,178)**, and further in view of **Fomenko (US 20030158871)**

As per claims 57, 71, and 85, Raime and Levine fully disclose claim 12. Raime and Levine disclose running multiple simulations and grouping them (**Raimi: Fig 8 discloses: files from multiple**

Art Unit: 2128

simulations). The combination however does not expressly disclose the method of Claim 12, wherein said storing comprises: for each of a plurality of simulation runs, grouping all trace files from that simulation run in a respective one of a plurality of file system subdirectories that are each dedicated to one of the plurality of simulation runs. Fomenko however discloses the said limitation (**para 24**). It would have been obvious to one of ordinary skill in the art <computer engineering / VLSI / circuit design, simulation, and debugging / version tracking> at the time of Applicant's invention to combine the references in order to have multiple workspaces that allow for difference confirmations of simulation runs. Furthermore, it allows the engineers to test and analyze the trace outputs across multiple simulation runs and having a subdirectory for each is one of the easiest and visually helpful ways of doing this; thus, saving costs associated with time required to re-generate old simulation runs. This versioning is also routinely used as a form of backup.

Support for Amendments and Newly Added Claims

15. Applicants are respectfully requested, in the event of an amendment to claims or submission of new claims, that such claims and their limitations be directly mapped to the specification, which provides support for the subject matter. This will assist in expediting compact prosecution. MPEP 714.02 recites: "Applicant should also specifically point out the support for any amendments made to the disclosure. See MPEP § 2163.06. An amendment which does not comply with the provisions of 37 CFR 1.121(b), (c), (d), and (h) may be held not fully responsive. See MPEP § 714." **Amendments not pointing to specific support in the disclosure may be deemed as not complying with provisions of 37 C.F.R. 1.131(b), (c), (d), and (h) and therefore held not fully responsive.** Generic statements such as "Applicants believe no new matter has been introduced" may be deemed insufficient.

Requests for Interview

16. In accordance with 37 CFR 1.133(a)(3), requests for interview must be made in advance. Interview requests are to be made by telephone (571-272-8634) call or FAX (571-273-8634). Applicants must provide a detailed agenda as to what will be discussed (generic statement such as

Art Unit: 2128

"discuss §102 rejection" or "discuss rejections of claims 1-3" may be denied interview).

The detail agenda along with any proposed amendments is to be written on a PTOL-413A or a custom form and should be faxed (or emailed, subject to MPEP 713.01.I / MPEP 502.03) to the Examiner at least 3 days prior to the scheduled interview.

17. Interview requests submitted within amendments may be denied because the Examiner was not notified, in advance, of the Applicant Initiated Interview Request and due to time constraints may not be able to review the interview request to prior to the mailing of the next Office Action.

Conclusion

18. All claims are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be reached on Monday thru Friday, 10am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/ DS /
David Silver, Patent Examiner
Art Unit 2128


KAMINI SHAH
SUPERVISORY PATENT EXAMINER